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(30) Priority Data:
09/146,185 01 September 1998 (01.09.1998) US(60) Parent Application or Grant
SENORX, INC. [/]; O. BURBANK, Fred, H. [/];
O. LUBOCK, Paul [/]; O. JONES, Michael, L. [/]; O. QUICK,
Richard, L. [/]; O. CHOW, Y. Ping ; O.

Published

(54) Title: SECURING SURGICAL INSTRUMENTS AT TARGET TISSUE SITES

(54) Titre: FIXATION D'INSTRUMENTS CHIRURGICAUX A DES SITES TISSULAIRES VOULUS

(57) Abstract

Devices and methods are provided for securely affixing a medical instrument to desired tissue in a patient's body, using a fixation agent. Such medical instruments may comprise localization wires or tissue acquisition instruments, such as biopsy instruments, for example. In the case of tissue acquisition instruments, the inventors have discovered significant advantages for securely affixing the distal end of the tissue acquisition instrument to a particular tissue target area. For example, such an approach permits the imaging environment to be uncoupled from the procedural environment so that expensive and often unavailable imaging equipment, such as stereotactic imaging equipment, need not be used. In a preferred embodiment, a bonding agent, such as adhesive, surgical glue, or a solvent, is used as the fixation agent.

(57) Abrégé

L'invention concerne des dispositifs et procédés de fixation solide d'un instrument médical, au niveau d'un tissu voulu, dans le corps d'un patient, et ce au moyen d'un agent de fixation. Un tel instrument médical peut comporter des fils métalliques de localisation ou des appareils de prélèvement de tissus, comme par exemple des instruments de biopsie. En ce qui concerne les instruments de biopsie, les inventeurs ont découvert des avantages importants d'une fixation solide, sur une zone cible de tissus, de l'extrémité distale de l'appareil de prélèvement de tissus. Par exemple, une telle approche permet de désaccoupler l'environnement d'imagerie de l'environnement de procédure, de sorte qu'il n'est pas nécessaire d'utiliser un matériel d'imagerie cher et souvent indisponible, comme un matériel d'imagerie stéréotaxique. Dans un mode de réalisation préféré, on utilise un agent de fixation, tel qu'un adhésif, une colle chirurgicale ou un solvant, en tant qu'agent de fixation.

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(71) Applicant: SENORX, INC. [US/US]; Suite 144, 13766 Alton Parkway, Irvine, CA 92618 (US).

(72) Inventors: BURBANK, Fred, H.; 30982 Steeplechase Drive, San Juan Capistrano, CA 92675 (US). LUBOCK, Paul; 30 Bethany, Laguna Niguel, CA 92677 (US). JONES, Michael, L.; 34441 Camino el Molino, Capistrano Beach, CA 92624 (US). QUICK, Richard, L.; 32181 Fall River Road, Trabuco Canyon, CA 92679 (US).

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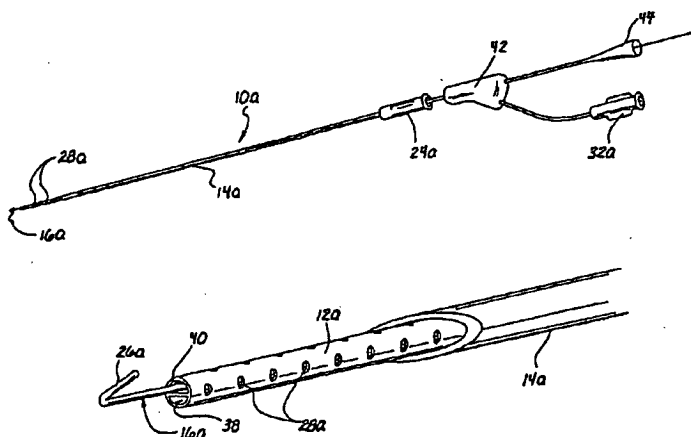
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(54) Title: SECURING SURGICAL INSTRUMENTS AT TARGET TISSUE SITES



(57) Abstract

Devices and methods are provided for securely affixing a medical instrument to desired tissue in a patient's body, using a fixation agent. Such medical instruments may comprise localization wires or tissue acquisition instruments, such as biopsy instruments, for example. In the case of tissue acquisition instruments, the inventors have discovered significant advantages for securely affixing the distal end of the tissue acquisition instrument to a particular tissue target area. For example, such an approach permits the imaging environment to be uncoupled from the procedural environment so that expensive and often unavailable imaging equipment, such as stereotactic imaging equipment, need not be used. In a preferred embodiment, a bonding agent, such as adhesive, surgical glue, or a solvent, is used as the fixation agent.

*(Referred to in PCT Gazette No. 31/2000, Section II)

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REVISED VERSION	INTERNATIONAL SEARCH REPORT	Internat. Application No PCT/US 99/19123
A. CLASSIFICATION OF SUBJECT MATTER IPC 7 A61B10/00. A61B17/00		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 A61B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 95 03843 A (UNIVERSITY OF CALIFORNIA) 9 February 1995 (1995-02-09) page 12, line 12; figures 5,8 page 13, paragraph 2 - paragraph 3	1,2,8,9
X	EP 0 601 709 A (VANCE) 15 June 1994 (1994-06-15) figure 1	1,23
A	US 5 749 887 A (HESKE) 12 May 1998 (1998-05-12) figures 1,2A	1,2,14
A	US 5 158 084 A (GHIATAS) 27 October 1992 (1992-10-27)	
A	US 4 425 908 A (SIMON) 17 January 1984 (1984-01-17)	
-/-		
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 48%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>		
Date of the actual completion of the international search <div style="text-align: center;">29 March 2000</div>		Date of mailing of the international search report <div style="text-align: center;">26.05.2000</div>
Name and mailing address of the ISA European Patent Office, P.B. 5518 Patentlaan 2 NL - 2280 HV Rijswijk Tel (+31-70) 340-2040, Tx. 31 651 epo nl, Fax (+31-70) 340-3016		Authorized officer <div style="text-align: center;">Barton, S</div>

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 99/19123

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 98 24372 A (ANGIOTRAX) 11 June 1998 (1998-06-11) figures 3,4,6,8	1,14,17, 20 23,30, 33,36
X	US 4 966 583 A (DEBBAS) 30 October 1990 (1990-10-30) figures 4,5	1,14,23, 30
X A	US 5 755 697 A (JONES) 26 May 1998 (1998-05-26) figures 9,10,15,16	1,14-16 31-33
X A	WO 94 27670 A (CARDIAC PATHWAYS) 8 December 1994 (1994-12-08) figures 3,4	1,14,17 33
X A	US 5 653 718 A (YOON) 5 August 1997 (1997-08-05) figures 45-49	1,18 34
A	US 5 700 273 A (BUELNA) 23 December 1997 (1997-12-23) column 5, line 30 - line 38; figures 2,4	15,31
A	US 5 449 382 A (DAYTON) 12 September 1995 (1995-09-12) abstract; claim 6	19,35
A	EP 0 797 957 A (ECLIPSE) 1 October 1997 (1997-10-01) figures 5,6	15-17,20
A	EP 0 769 281 A (USSC) 23 April 1997 (1997-04-23) column 13, last paragraph; figures 31-33	23, 30-32, 35
A	US 5 766 163 A (MUELLER) 16 June 1998 (1998-06-16)	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 99/19123

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 41-48
because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

The International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☒ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
1,2,8,9,14-20,23,30-36
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1,2,8,9,23

Medical device with tissue attachment and localisation wire

2. Claims: 1,3-13,23-29,40

Medical device with [means for dispensing] a dispensable bonding agent as means for fixing distal end to target tissue

3. Claims: 1,14-20,23,30-36

Medical device with expandable mechanical structure as means for fixing the distal end to target tissue

4. Claims: 1,21,22,38,39

Medical device with electrocautery means as means for fixing the distal end to target tissue

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/US 99/19123

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9503843 A	09-02-1995	AU 7404994 A US 5921982 A	28-02-1995 13-07-1999
EP 601709 A	15-06-1994	AU 5050593 A CA 2102084 A JP 6197904 A US 5488958 A	19-05-1994 10-05-1994 19-07-1994 06-02-1996
US 5749887 A	12-05-1998	DE 4424394 A	18-01-1996
US 5158084 A	27-10-1992	NONE	
US 4425908 A	17-01-1984	NONE	
WO 9824372 A	11-06-1998	US 5910150 A US 5941893 A AU 5366498 A AU 5510198 A US 5951581 A WO 9824373 A US 5931848 A US 5899915 A US 6010476 A	08-06-1999 24-08-1999 29-06-1998 29-06-1998 14-09-1999 11-06-1998 03-08-1999 04-05-1999 04-01-2000
US 4966583 A	30-10-1990	CA 2080897 A EP 0591140 A EP 0699088 A WO 9116099 A WO 9311827 A US 5445645 A US 5662674 A US 5183463 A US 5301682 A	27-10-1991 13-04-1994 06-03-1996 31-10-1991 24-06-1993 29-08-1995 02-09-1997 02-02-1993 12-04-1994
US 5755697 A	26-05-1998	NONE	
WO 9427670 A	08-12-1994	US 5507802 A	16-04-1996
US 5653718 A	05-08-1997	US 5540648 A	30-07-1996
US 5700273 A	23-12-1997	AU 6343796 A CA 2205176 A EP 0785752 A WO 9703613 A US 5846253 A US 5836955 A US 5836956 A	18-02-1997 06-02-1997 30-07-1997 06-02-1997 08-12-1998 17-11-1998 17-11-1998
US 5449382 A	12-09-1995	US 5578075 A	26-11-1996
EP 797957 A	01-10-1997	US 5725521 A AU 1660097 A CA 2200916 A JP 10033550 A	10-03-1998 02-10-1997 29-09-1997 10-02-1998
EP 769281 A	23-04-1997	CA 2187975 A US 5879357 A	21-04-1997 09-03-1999

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No.

PCT/US 99/19123

Patent document cited in search report.	Publication date	Patent family member(s)	Publication date
US 5766163 A	16-06-1998	NONE	